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**(54) LITHIUM MANGANESE  
DOUBLE OXIDE, ITS  
PRODUCTION AND  
APPLICATION**

(57) Abstract:

**PURPOSE:** To obtain a lamellar  $\text{LiMnO}_2$  used as a positive pole material for lithium secondary battery fine and large in surface area and showing high output and high energy density, and capable of applying for various uses as a host compound without restricting the atmosphere by specifying particle diameter and BET specific surface area.

**CONSTITUTION:** The lamellar  $\text{LiMnO}_2$  is composed of particles having  $\leq 5\mu\text{m}$  particle diameter and  $\geq 10\text{m}^2/\text{g}$  BET specific surface area. The acicular hydrated manganese oxide ( $\gamma\text{-MnOOH}$ ) having the equivalent diameter to  $\leq 1\mu\text{m}$  minor axis diameter,  $\leq 5\mu\text{m}$  major axis diameter and  $\leq 1\mu\text{m}$  thickness is used to synthesize the lamellar  $\text{LiMnO}_2$ . The acicular hydrated manganese oxide is stirred in a Li containing alkaline aq. solution  $\geq 1.0$  in Li/Mn mol ratio and  $\geq 1.0$  in OH/Mn mol ratio, heated at  $\leq 200^\circ\text{C}$  in an atmosphere containing oxygen and heated at  $\geq 200^\circ\text{C}$  in an atmosphere containing no oxygen to remove water.



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